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Docket No. A-2812

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MAIL STOP: APPEAL BRIEF-PATENTS

By:  Date: October 31, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

Applic. No. : 09/927,545 Confirmation No.: 6082
Inventor : Peter Schlemm
Filed : August 9, 2001
Title : Method and Device for Executing Method Steps
TC/A.U. : 2857
Examiner : Anthony Gutierrez
Customer No. : 24131

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

SUPPLEMENTAL BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated November 8, 2004, finally rejecting claims 1-16.

Appellants submit this *Supplemental Brief on Appeal* in triplicate in response to the Notice of Non-Compliant Appeal Brief dated September 9, 2005.

Real Party in Interest:

This application is assigned to Nash-Elmo Industries GmbH of Nürnberg, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-3 and 5-17 are under appeal. Claim 4 was cancelled in an amendment dated December 20, 2004.

Status of Amendments:

Claims 1, 5, 6, and 11 were amended after the final Office action. An amendment under 37 CFR § 1.116 was filed on December 20, 2004. The Primary Examiner stated in an *Advisory Action* dated January 7, 2005, that the request for reconsideration had been considered but did not place the application in condition for allowance and that the amendment would be entered for purposes of appeal.

Summary of the Claimed Subject Matter:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a steam turbine plant having a vacuum pumping configuration that has a jet pump and a liquid ring pump disposed in series one after the other. The invention also relates to a method of operating a steam turbine plant, in which a plant component is deaerated by use of a vacuum pumping configuration which has a jet pump and a liquid ring pump disposed in series one after the other.

Appellants explained on page 13 of the specification, line 21, that, referring now to the figures of the drawing in detail and first, particularly, to Fig. 1 thereof, there is shown a steam turbine plant 2 that has a steam turbine 4 which in particular is a low-pressure stage of a, for example, 3-stage main turbine plant. Such a multistage main turbine plant is used, for example, in power plants for the generation of power with an output within the gigawatt range. On an output side, the steam turbine 4 has a vacuum, which in a low-pressure stage is typically within a range of between 18 mbar and 80 mbar. Process steam P fed to the steam turbine 4 leaves the latter via output lines 6 and is fed to a first condenser 8. The process steam P is condensed in the condenser 8, the condensate being discharged via a discharge line 10 and fed

again as feed water to a boiler (not shown in any more detail).

It is outlined on page 14 of the specification, line 11, that, during the condensing, a gas/steam mixture designated as delivery gas F collects in the first condenser 8 and is drawn off via a first deaerating line 12 by a vacuum pumping configuration 14.

Appellants further described on page 15 of the specification, line 18, that the vacuum pumping configuration 14 contains a jet pump 26 and a liquid ring pump 28 disposed downstream of the jet pump 26 in the direction of flow. To this end, the second deaerating line 20 is connected to a suction region 27 of the jet pump 26, and the latter is connected on the output side to a suction connection 30 of the liquid ring pump 28. The delivery gas F from the two condensers 8, 18 is thus first of all precompressed by the jet pump 26. To this end, the jet pump 26 is operated with a motive fluid T that is fed externally and mixes with the delivery gas F. The pressure in the first condenser 8 and in the second condenser 18 is typically within a range which corresponds approximately to the output pressure of the steam turbine 4 and of the auxiliary turbine 16, respectively. There is therefore a vacuum within a range of between 18 and 80 mbar in both

condensers 8, 18. Consequently the delivery gas F likewise has this vacuum. It is compressed approximately by the factor 3 in the jet pump 26 and then further up to ambient pressure in the liquid ring pump and is expelled via a pressure connection 34.

As explained on page 17 of the specification, line 6, it is essential that, in addition to the air L, steam D is also fed as the motive fluid T to the jet pump 26 via a steam line 48. A further valve 44 is connected in the steam line 48. In this case, the steam line 48 is connected to a sealing-steam circuit 50 in which sealing steam S is directed through a number of turbine seals 52. The turbine seals 52 in this case are assigned to the steam turbine 4 and to the auxiliary turbine 16 and are configured as labyrinth seals in order to seal off a rotating shaft of the turbines 4, 16 from the environment. After flowing through the turbine seals 52, the sealing steam is also referred to as low-tension steam. The steam D is fed as the motive fluid T to the jet pump 26. The motive fluid T is therefore a steam/air mixture, it being possible for the respective proportions of the steam D and of the air L to be set via the two valves 44. An equal distribution between steam D and air L is preferably set. If an adequate steam quantity is available, steam D may also be used exclusively as the motive fluid T. Since the low-tension

steam is excess steam collecting in the steam turbine plant 2, the overall efficiency of the steam turbine plant 2 is not impaired by use of the low-tension steam as the motive fluid T.

As outlined in the last paragraph on page 19 of the specification, line 22, a steam turbine plant of such a configuration with a uniform, central vacuum pumping configuration 14 has essentially the following advantages:

- a. On account of the use of steam D and air L as the motive fluid T for the jet pump 26 - compared with the use exclusively of air L as the motive fluid T - the liquid ring pump 28 can be configured to be markedly smaller, since the steam D condenses in the liquid ring pump, and only the air proportion has to be compressed to atmospheric pressure.
- b. The low-tension steam collecting in the sealing-steam circuit 50 is preferably completely directed via the vacuum pumping configuration 14. In this case, it is not absolutely necessary for the entire quantity of the low-tension steam to be used as the motive fluid T for the jet pump 26. By the feeding of the low-tension steam to the liquid ring pump 28 having the associated separator 38, the low-tension steam is

condensed, so that a separate condensing system is not required for the low-tension steam.

c. For all the plant components that have to be connected to a vacuum system, the vacuum pumping configuration 14 is provided as a central vacuum system. This makes possible a simple and cost-effective installation. In particular, it is not necessary to install a plurality of decentral vacuum pumping systems.

d. Due to the connection of the third deaerating line 24 to the additional port 35, a suction capacity provided virtually "for nothing" by the liquid ring pump 28 is utilized without the liquid ring pump 28 having to be of larger dimensions due to the connection of this third deaerating line 24.

References Cited:

4,484,457	Mugele	November 27, 1984
5,749,227	Smith, et al.	May 12, 1998

Grounds of Rejection to be Reviewed on Appeal

1. Whether or not claims 6-8 and 10 are indefinite under 35 U.S.C. §112, second paragraph.

2. Whether or not claims 1-3 and 5-17 meet the requirements of 35 U.S.C. § 112, first paragraph.

3. Whether or not claims 1-3 and 5-17 are obvious over Smith et al. (U.S. Patent No. 5,749,227) (hereinafter "Smith") in view of Mugele (U.S. Patent No. 4,484,457) under 35 U.S.C. §103.

Argument:

Whether or not claims 6-8 and 10 are indefinite under 35 U.S.C. §112, second paragraph.

The Examiner's comments in the second paragraph on page 2 of the office action dated June 14, 2005, that both Applicant's representative and the Examiner miss a serious 35 U.S.C. §112, second paragraph rejection due to an amendment during prosecution of the case, are entirely incorrect. Appellants recognized the error and as such indicated in the "Grouping of the Claims" section of the Appeal Brief that claims 6 and 10 incorrectly depend from cancelled claim 4. Claims 6 and 10 will be appropriately amended at the completion of the appeal to depend from claim 1. Therefore, Applicants' representative did not miss the serious rejection under 35 U.S.C. §112, second paragraph.

As noted above, applicants acknowledge the Examiner's rejection in the third paragraph of the Office action dated June 14, 2005, rejecting claims 6-8 and 10 under 35 U.S.C. §112, second paragraph for being dependent on a cancelled claim 4. As stated in the Appeal Brief and as stated above, claims 6 and 10 will be appropriately amended at the completion of the appeal to depend from claim 1.

Whether or not claims 1-3 and 5-17 meet the requirements of 35 U.S.C. § 112, first paragraph.

Claims 1-3 and 5-17 meet the requirements of 35 U.S.C. § 112, first paragraph:

Claims 1 and 11 of the instant application call for *inter alia*:

a vacuum pumping configuration having a jet pump including a suction region and a motive fluid connection ...a steam line connecting the sealing-steam circuit to the motive fluid connection of the jet pump for feeding sealing steam to the jet pump as a motive fluid.

The Examiner requests on page 3 of the Office action dated June 14, 2005, that "if Applicant decides to maintain his arguments, please explain why his fluid in line T can be used to impart motion of any working member".

Claims 1 and 11 recite that the jet pump has a motive fluid connection and that sealing steam for the turbines is connected to the motive fluid connection. As evidenced by the numerous examples of motive fluids for jet pumps in the specification of the instant application (page 3, lines 13-17; page 5, lines 4-19; page 5, line 25 to page 6, line 4; and page 6, lines 6-9), the term motive fluid for a jet pump is not a complex concept and the term is very well known to a person of ordinary skill in the art. Even though the above listed sections of the specification clearly shows the meaning of a motive fluid for a jet pump, further support for the correct definition of "motive fluid" for a jet pump, as is well known in the art, is found on the website:

<http://www.kinetic-therm.com/english/product/ejec-thermo-vac/page01.htm>, where it is disclosed that "motive fluid" for a jet pump is the fluid that drives the "aspirated fluid."

Furthermore, the website:

http://www.flowfactor.com/penberthy_jet_pump_operation.htm, discloses that:

An operating fluid media, which is referred to as the MOTIVE, under pressure enters the inlet and is forced through the nozzle where it is converted into a high-velocity stream. This high-velocity stream decreases the pressure in the suction chamber, creating a partial vacuum that draws the suction material into the chamber where it is entrained by the motive media. Once the SUCTION stream is drawn in, shear between motive media and the transported material causes both media to be intermixed and pumped out the DISCHARGE outlet, dispelled at a pressure greater than the of the SUCTION stream but lower than that of the MOTIVE.

As seen in Fig. 1 of the instant application, the application of the mixture of the steam "D" (delivered through line 48) and the air "L" (delivered through line 42) is fed as the motive fluid "T" to the jet pump whereas the delivery gas "F" is fed as aspirated fluid or suction material in the jet pump. Because a jet pump requires a motive fluid to function, the fluid "T" of the instant application is that fluid.

In the last paragraph on page 4 of the Office action, the Examiner stated that claims 1-3 and 5-17 fail to comply with the enablement requirement of 35 U.S.C. §112, first paragraph. The rejection is not proper.

The Examiner alleges on page 5 of the Office action that "according to the definition noted above, the fluid in line T of Applicant's invention is not motive fluid because it's

connected to a jet pump." The Examiner is not correct. More specifically, as seen from the above given comments and definition of motive fluid as pertaining to a jet pump, the motive fluid "T" is the fluid that drives the jet pump to create vacuum for the aspirated fluid (delivery fluid "F"). Therefore, the motive fluid of the claims is by definition the motive fluid for a jet pump precisely as recited in claims 1 and 11 of the instant application.

The Examiner's allegations in the last sentence in the first paragraph of page 5 are not entirely correct. The Examiner is correct in stating that the fluid line (17) of Smith does not impart any motion to the vacuum pump (8) as it is a delivery fluid. However, as seen from the comments provided above, the Examiner is completely in error when he states that the fluid T in the instant application does not impart any motion. More specifically, as seen from the well-known definition of a jet pump the fluid "T" in the instant application is most definitely a motive fluid that imparts motion to the jet pump.

Accordingly, claims meet 1-3 and 5-17 do meet the requirements of 35 U.S.C. §112, first paragraph.

Based on the above-given arguments, the honorable Board is therefore requested to disregard the comments by the Examiner with regard to the rejections under 35 U.S.C. §112.

Whether or not claims 1-3 and 5-17 are obvious over Smith et al. (U.S. Patent No. 5,749,227) (hereinafter "Smith") in view of Mugele (U.S. Patent No. 4,484,457) under 35 U.S.C. §103.

Claims 1 and 11 are not obvious over Smith in view of Mugele under 35 U.S.C. §103:

The following arguments from the original appeal brief are reproduced here for convenience purposes as they all are deemed to still be relevant, the comments have not been altered.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claims 1 and 11 call for, *inter alia*:

a steam line connecting the sealing-steam circuit to the motive fluid connection of the jet pump for feeding sealing steam to the jet pump as a motive fluid.

Smith and Mugele do not disclose using the sealing steam or low tension steam, which accumulates as a natural by-product during normal operation of a steam turbine, as a motive fluid for a jet pump which is used as a pre-pump. In order to accomplish this, the present invention has a motive fluid inlet of a jet pump that is connected to the sealing steam leakage by a motive fluid line, while a suction region of the jet pump is connected with a condenser by a deaerating line (or exhaust line) so that the sealing steam and the supply gas of the jet pump are fed separately.

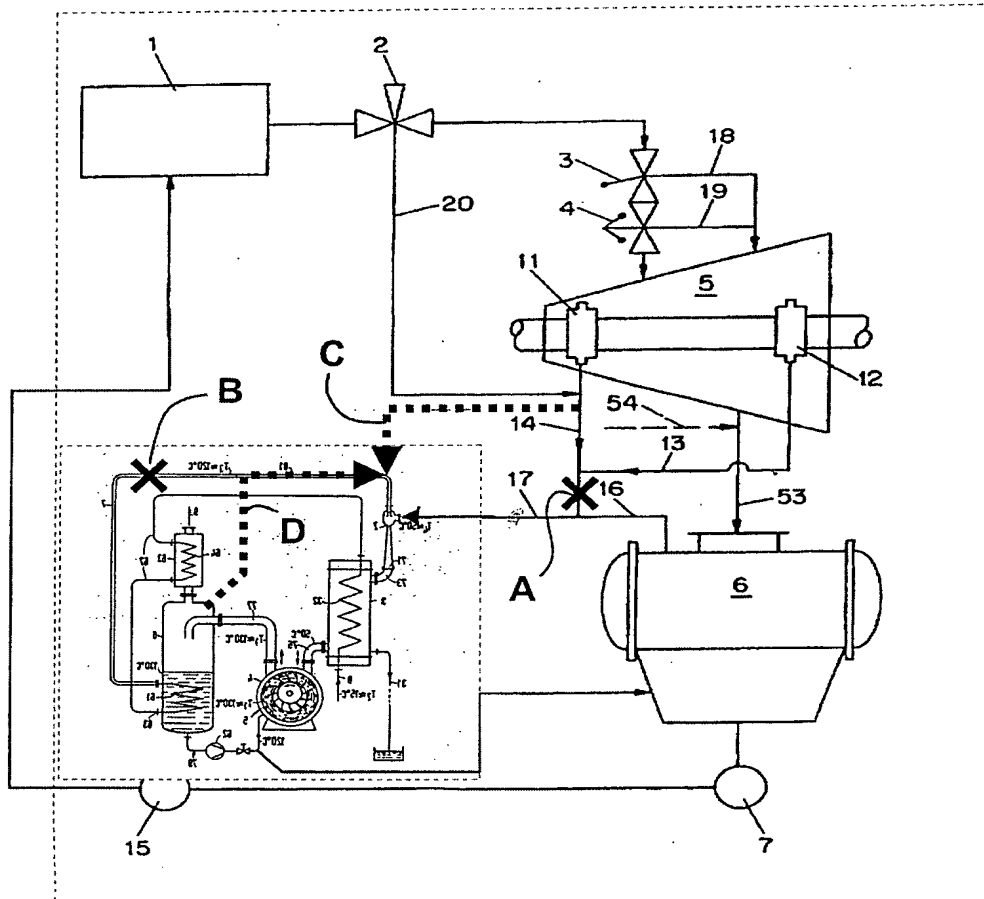
It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest all the claim limitations.

The references do not show or suggest a steam line connecting the sealing-steam circuit to the motive fluid connection of the jet pump for feeding sealing steam to the jet pump as a motive fluid, as recited in claims 1 and 11 of the instant application.

The Smith reference discloses that the sealing steam is introduced into the vacuum header (17) (column 4, lines 40-45 and lines 58-60), which is connected to the suction connection of the vacuum pump configuration. Accordingly, the sealing

steam is fed to the vacuum pump configuration as a component of the delivery gas and not as a motive fluid. If a person of ordinary skill in the art were to use the vacuum pump configuration of Mugele in the steam turbine plant of Smith, the sealing steam would still be fed via the vacuum header (17) together with the exhaust gas from the condenser (6) to the suction connection of the jet pump and not as a motive liquid for the jet pump, this is contrary to the invention of the instant application as claimed, in which the sealing steam is used as a motive fluid for the jet pump.

The following further comments regarding Smith and Mugele pertain to the drawing provided below to help explain why Smith and Mugele do not show or suggest the above-noted limitations. The drawing is a combination of Fig. 1 of Smith and Fig. 1 of Mugele with additional symbols "A", "B", "C", and "D" added by appellants.



In order to obviate the present invention according to claims 1 and 11, a person of ordinary skill in the art would have to

seal the exhaust line (14) of Smith and the conduit (7) of Mugele (positions "A" and "B" of the supplemental drawing).

Furthermore, a person of ordinary skill in the art would have to connect the exhaust line (14) of Smith with the motive fluid inlet of jet pump (2) of Mugele by way of a motive fluid line (see line "C" of the supplemental drawing).

The references do not provide a person of ordinary skill in the art with any motivation for making such modifications to Smith and Mugele. Therefore, the references do not show or suggest a steam line connecting the sealing-steam circuit to the motive fluid connection of the jet pump for feeding sealing steam to the jet pump as a motive fluid, as is recited in claims 1 and 11 of the instant application.

The references applied by the Examiner do not teach or suggest all the claim limitations. Therefore, the Examiner has not produced a *prima facie* case of obviousness.

Furthermore, a critical step in analyzing the patentability of claims pursuant to 35 U.S.C. § 103 is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. See In

re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614,1617 (Fed. Cir. 1999). Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher." Id. (quoting W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983)).

Most if not all inventions arise from a combination of old elements. See In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453,1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See id. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the appellant. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 163.5, 1637 (Fed. Cir. 1998); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125,1127 (Fed. Cir. 1984).

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617. In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. See WMS Gaming, Inc. v. International Game Tech., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) (and cases cited therein). Whether the Examiner relies on an express or an implicit showing, the Examiner must provide particular findings related thereto. See Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617. Broad conclusory statements standing alone are not "evidence." Id. When an Examiner relies on general knowledge to negate patentability, that knowledge must be articulated and placed on the record. See In re Lee, 277 F.3d 1338, 1342-45, 61 USPQ2d 1430, 1433-35 (Fed. Cir. 2002).

Upon evaluation of the Examiner's comments, the evidence adduced by the Examiner is insufficient to establish a prima facie case of obviousness with respect to the claims.

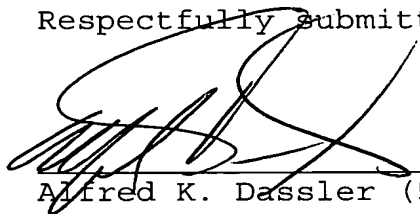
Since claims 1 and 11 are allowable, dependent claims 2, 3, 5, and 6-17 are allowable as well.

Even though claims 2 and 3 are believed to be allowable, the following remarks pertain to claims 2 and 3.

A person of ordinary skill in the art would have to add an additional gas line (see line "D" of the supplemental drawing) to obviate claims 2 and 3 of the instant application. For this reason alone, claims 2 and 3 are not shown or suggested by Smith and Mugele. Therefore, claims 2 and 3 are not obvious over Smith and Mugele.

Based on the above-given arguments, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,



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Claims Appendix:



A steam turbine plant, comprising:

a steam turbine;

a condenser disposed downstream of said steam turbine and
condensing process steam discharging from said steam turbine;

a vacuum pumping configuration having a jet pump including a
suction region and a motive fluid connection and having a
liquid ring pump disposed in series one after another, said
liquid ring pump connected to a load side of said jet pump;

a deaerating line connecting said condenser to said vacuum
pumping configuration, said deaerating line provided for
deaerating said condenser;

a sealing steam circuit for a turbine seal; and

a steam line connecting said sealing-steam circuit to said
motive fluid connection of said jet pump for feeding sealing
steam to said jet pump as a motive fluid.

2. The plant according to claim 1, further comprising a gas
line connected to said steam line, said gas line admixing air

to the steam resulting in a steam/air mixture as the motive fluid.

3. The plant according to claim 2, wherein said liquid ring pump has a pressure side and said gas line is also connected on said pressure side to said liquid ring pump.

5. The plant according to claim 1, further comprising:

an auxiliary turbine;

a further condenser disposed downstream of said auxiliary turbine; and

a further deaerating line connecting said further condenser to said vacuum pumping configuration.

6. The plant according to claim 4, further comprising an additional deaerating line, said condenser, for a cooling liquid, has a water chamber, which, in order to deaerate said water chamber, said water chamber is connected to said vacuum pumping configuration by said additional deaerating line.

7. The plant according to claim 6, wherein said liquid ring pump has an additional port connected to said additional deaerating line.

8. The plant according to claim 7, wherein said liquid ring pump has a housing with a suction connection and a pressure connection, said additional port is disposed between said suction connection and said pressure connection and is connected to a working space forming during operation.

9. The plant according to claim 3, further comprising a separator connected between said pressure side of said liquid ring pump and said gas line.

10. The plant according to claim 4, wherein said steam turbine has a low-pressure part and said condenser is provided for condensing the process steam discharging from said low-pressure part.

11. A method of operating a steam turbine plant, which comprises the steps of:

deaerating a plant component using a vacuum pumping configuration having a jet pump and a liquid ring pump disposed in series one after another;

feeding steam collecting in the steam turbine plant as sealing steam for a turbine seal as a motive fluid to a motive fluid connection of the jet pump.

12. The method according to claim 11, which further comprises forming the motive fluid as a steam/air mixture.

13. The method according to claim 12, which further comprises setting a ratio of steam and air in the steam/air mixture to be approximately equal.

14. The method according to claim 11, which further comprises condensing the sealing steam in the vacuum pumping configuration.

15. The method according to claim 11, which further comprises deaerating a condenser of a steam turbine.

16. The method according to claim 15, which further comprises deaerating a water chamber of the condenser.

17. The method according to claim 16, which further comprises for deaerating the water chamber, drawing off

saturated water-chamber air collecting in the water chamber
through an additional port in the liquid ring pump.

Evidence Appendix:

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence has been entered by the Examiner and relied upon by appellant in the appeal.

(if a 1.131 or 32 Declaration was filed in this application, it must be appended to the Brief on Appeal).

Related Proceedings Appendix:

Since there are no prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal, no copies of decision rendered by a court or the Board are available.